



# Houk-Jung Organic Colloquium

## Unlocking Fluorine: Activation of Sulfur(VI) Fluorides for New Sulfur-Fluorine Exchange (SuFEx) Reactions

**Abstract:** Sulfur-fluoride exchange (SuFEx) chemistry is emerging as a promising synthetic tool in chemical biology, material science, and synthetic chemistry. In synthesis, sulfur (VI) fluorides show unique promise as synthons in organic chemistry due to their stability versus other sulfur (VI) halogen analogues. Key to the adoption of SuFEx chemistry is the development of efficient modes to synthesize and react sulfur (VI) fluorides. Research initiatives employing group 2, and transition-metal chemistry toward the synthesis of sulfonyl fluorides will be described. New SuFEx methods that react a broad set of S (VI) fluorides with carbon, oxygen, and nitrogen-based nucleophiles towards structurally diverse S(VI) compounds will also be presented.

A focus will be on a new SuFEx reaction to synthesize nitrogen-based sulfonylated compounds from a variety of S(VI) fluorides mediated via a Lewis acidic calcium salt will be described. Under a unified set of reaction conditions, sulfonyl fluorides, fluorosulfates, and sulfamoyl fluorides can be coupled with a variety of amines to synthesis a wide array of aryl and alkyl sulfonamides, sulfamides, and sulfamates in good to excellent yield. Computational and NMR kinetic studies that aim to elucidate the mechanism of Ca-activation will be discussed. Lessons learned from the mechanistic studies have led to preliminary data suggesting Ca-catalysis is possible.

Prof. Nicholas Ball  
Department of Chemistry  
Pomona College

Thursday, Feb 9, 2023 | 4:00 PM  
Mani L. Bhaumik Collaboratory - YH 4222  
Dongwon Yoo Seminar & Conference Hall

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Questions: [Isaiahgtz@chem.ucla.edu](mailto:Isaiahgtz@chem.ucla.edu)